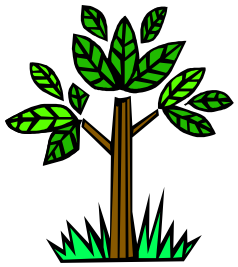


The Natural Inquirer
A guide for Teachers & Educators

Created by: Heather Taylor

Inquiry: a question; an investigation
inquire-examine-explore-probe-question-search-seek-ask

As scientists and teachers of science, our goal is to teach students the scientific method, no matter what our area of focus – biology, chemistry, physics, etc. This can best be taught by focusing on inquiry and investigation. This allows the learner to be independent, and seek answers to questions throughout the world we live in. As educators of secondary school students, we are constantly faced with engaging our students in scientific inquiry in new and different ways. Standard teaching strategies can become monotonous to today's learners in an age of abundant technology and a hands-on, minds-on focus. *The Natural Inquirer* gives a fresh approach to science and a view of the outside world bigger than the classroom that can be used while still in the school setting.

A teacher's perspective on *The Natural Inquirer*

As a seventh grade science teacher, I knew what I would be looking for in a manual to accompany this journal. I wrote this in such a way so that hopefully other teachers would gain insight on how to implement *The Natural Inquirer* in their classrooms. As all teachers are unique, you may take out of this as much or as little as you wish. Some teachers may absorb this in great detail. Others may skim the surface for general ideas. I enjoyed writing this manual because I knew I would get a lot out of it for myself and my students, I hope that you may take something away that is useful to you. I implemented *The Natural Inquirer* into my curriculum at the end of the year with my students. I did this with no teacher's manual. I devised a lesson plan, used it in my classes, and had success with this project. I had a few problems, such as allotting enough time, knowing when to stop for the reflection questions, giving the students enough time to do the FACTivity, and deciding how to introduce and close the lesson. The students seemed to enjoy the assignment and did what was asked of them. However, since I did not have a teacher's manual, I sometimes felt like they wondered what the purpose was, or how this fit into what they were learning. All things I felt like could be handled better the next time I used this teaching tool.

After having created the teacher's manual, I implemented *The Natural Inquirer* with some summer school students. The make-up of this summer school class was different from that of a regular class during the year. Summer school students have usually failed at least one class during the year, and they are in summer school to be promoted to the next grade or simply for remediation. These students may be low achievers who are not easily motivated and do not care about learning-- they only want to get their grades up to be able to go to the next grade level. Many do not see school as important, and many will not go to any school past high school, if they even graduate from high school. These students are often troublemakers, are often truant, and do not get excited or interested in schoolwork. I had surprising results with this project! I explained to the students what we would be doing during this lesson, and they listened intently and seemed interested and excited about it. Then I handed out copies of one of *The Natural Inquirer* articles and they read it. The students seemed focused; they did what was asked of them, and stayed on task. They talked with their peers about the lesson rather than off-task topics! After reading the article, we talked about the implications and they seemed to realize the importance and to actually care! We discussed the reflection questions and did the Factivity. They had fun with it and enjoyed it. They really did a good job, and took time with their work rather than hurriedly working through it, and were interested in discussing what they did. They shared with their peers and then we finished up the lesson. I could really tell that they were thinking on a higher level, and they used the scientific method to reason. I was very proud of the way they were thinking about the lesson, and what it means to their lives and the world around them. It was a great class!

Having the teacher's manual made all the difference to me. The lesson plans gave me a better direction of where I wanted to go with the lesson. The manual prepared me for what the students would be learning and the direction that I wanted to go in developing their critical thinking. I was able to plan better, make better use of class time, and able to give the students an insight that I didn't have before!

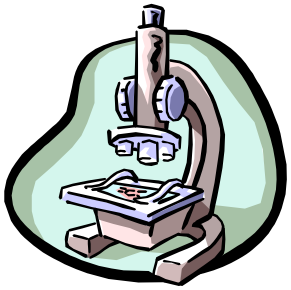
What is *The Natural Inquirer?*

The Natural Inquirer is a science education resource journal to be used with learners ranging from Grade 5 and higher, with a focus on the secondary (grades 7-12) learner. *The Natural Inquirer* contains natural resource research articles conducted by USDA Forest Service scientists. These are scientific journal articles that have been reformatted to meet the needs of audiences who are new to the area of science. The articles are easier to understand, shortened, more aesthetically pleasing to the eye, contain glossaries, and include hands-on activities. The goal of this magazine is to promote critical thinking, scientific inquiry, and investigation while learning about our natural resources and the environment.

Who is *The Natural Inquirer* for?

This is a learning tool for students in Grade 5 and higher. Any teacher can use it with his/her class. Any science discipline could find connections in *The Natural Inquirer* – biology, chemistry, geology, environmental science, physical science, and earth science. It is especially designed for those individuals who are interested in teaching inquiry and promoting investigation. *The Natural Inquirer* meets national science

education standards and can be correlated to numerous state science education standards. It should be used by those teachers who want to broaden their students' knowledge about science issues. A focus on scientific journals and encouraging the reading of scientific materials is appealing to science teachers.



Why use *The Natural Inquirer* ?

The Natural Inquirer is a way to give variety to the standard curriculum as well as teaching valuable content and process skills. It allows teachers to address some of the issues identified by contemporary science education experts. *The Natural Inquirer* will help you meet three of the four goals of the **National Science Education Standards.** These goals include:

*****Educating students to understand the process of science.

*****Fostering critical thinking about science and encouraging intelligent and thoughtful discussion and debate about matters of scientific concern.

*****Helping students experience the richness of knowing about and understanding the natural world.

In addition, *The Natural Inquirer* is an easy-to-use resource that addresses some of the recommendations of the science education reform movement (Hurd, 1997). Specifically, *The Natural Inquirer*:

*****Represents "the strategic nature or mission-oriented research of contemporary science" (p. 15) by showing the many ways that Forest Service scientists address their mission of enhancing forest health and sustainability.

*****Interconnects "the sciences, technology, society, economy, individual development, quality of life, and civic responsibilities" (p. 15) by presenting contemporary natural resource science from the fields of biology, silviculture, entomology, sociology, economics, history, wildlife biology, climatology, geography, and just about every natural resource science.

*****Helps to meet "the science education demands for the twenty-first century" by enabling students to study "the current nature and practice of science" (p. 15).

*****Is "organized in terms of problems that connect science/technology with self, community, society, and the future" (p. 16) by presenting real life problems that may affect the student's quality of life now and in the future.

*****Helps to "close the gap between school and work" (p. 16) by showing the faces and names of real scientists.
*****Represents "the interdisciplinary nature and blending of contemporary research in the sciences" (p. 16-17) by presenting how natural resource scientists use a variety of
scientific approaches and disciplinary techniques to solve problems.
*****Helps learners to develop "higher order thinking skills" (p. 17), by encouraging them to judge the credibility and usefulness of science within personal and social contexts.
*****Presents science as social inquiry (p. 16), by encouraging learners to understand science as a means for resolving social and economic problems.

The Natural Inquirer, therefore, is meant to be used to help teachers focus attention on and foster understanding of science as a process, while providing contemporary natural resource topics that fit into statewide curriculum requirements. *The Natural Inquirer* provides variety to the established science curriculum and gives teachers a resource to use that encourages discussion and critical thinking, integrates language arts with science, and shows the dynamic, varied, and integrated nature of science.

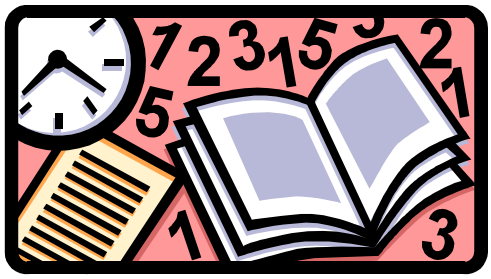
The Natural Inquirer **Focuses on Process, but Provides Content**

Although each article in *The Natural Inquirer* could be read for its scientific content, the articles are designed to highlight the scientific process. The teacher, however, may wish to present articles that match the content he or she is covering in a particular unit. For example, a land-use study highlights how landforms change over time, or an entomology study focuses on the diet of woodpeckers and their dependence on old growth forests. Although some articles may enhance unit goals by providing specific information, using *The Natural Inquirer* just for content will limit its usefulness to teach the scientific method, critical thinking, and to meet national science education standards and the goals of science education reform.

The articles in *The Natural Inquirer* are designed to enhance a student's appreciation for science by highlighting the process of science in addition to the content. This is important in contemporary society, where the
problems and topics of today's science will quickly fade in favor of new issues. Learners of all ages must become more familiar with how information is discovered through the scientific process if they are to become effective participants in a democratic society. This is not familiar territory for students or adults in today's world. Most of us are accustomed to learning facts (like *what* woodpeckers eat), rather than learning about the scientific process (how did the scientist discover what woodpeckers eat? Or *why* did the scientist care what woodpeckers eat?). Most students will need to be encouraged to think critically about the scientific process (e.g., If you were the scientist, *how would you*

discover what woodpeckers eat? If you were the scientist, *how could you* make this experiment different?).

Teachers should emphasize the scientific processes involved, or students are apt to consider them less important than the content. Many students, and perhaps teachers as well, believe that the scientific process always follows the familiar format: Observation~ Hypothesis~ Controlled Experiment~ Evaluation~ Theory. Close attention to the scientific processes involved in these articles will guide students to the realization that the scientific method is not just one method, but is a collection of similar processes used in scientific discovery.



How does *The Natural Inquirer* teach process skills?

How to teach process skills is an age-old question for science teachers! We usually end up relying on a science fair project or the teaching of the scientific method to teach process skills. But what if we could teach process skills and the students didn't even know that we
were teaching them? The students just think we are doing a fun enrichment activity? *The Natural Inquirer* discusses content relevant to the science field and discipline. However, in the way that the articles are presented, the teaching of process skills is abundant throughout. The students must find out that before any studies were done or experiments were conducted, the scientist first had a question or a problem that they did not have an answer to. So, that led him/her to think about **WHY** things happened, rather than just the fact that they happened! Therefore, the scientists came up with a hypothesis, or a guess, of what was happening and why. Next, the scientist observed what was going on by being in the field with the phenomena. That way, the scientist can actually be in the situation with which they are interested in learning about. After the observations are made, the scientist may look at the results. They may even be able to better analyze what they have found out by putting the results on a graph, or a chart. This helps the scientist to organize things in a way that makes sense. So, the scientist can draw conclusions about what is happening. These conclusions can help in further understanding and getting an answer for the question at hand. After this, the scientist wants to share the new knowledge that they have gained with others. This is why the students are reading the article now! The scientist wants to make other people aware of this scientific occurrence that they have been studying and finding out about. They publish it in an article, or a journal, and then it has ended up in *The Natural Inquirer!* The students can see the progression of the scientific method unfolding as they read. In this way, the scientific process will hopefully become almost second nature to them, rather than something they have to think about doing. Also, they can see how the scientific method can help them with any

problem for which they are looking for an answer. Students will see that it is relevant to real life situations, and not just something they learn in school that stays in a book or on paper. This is our goal as teachers of science, that what we teach our students becomes a part of them that they can take away from our class and use throughout their life, whether they become scientists, construction workers, teachers, factory workers, or whatever their career choice may be.

What if You Aren't familiar With the Content of the Article?

People (even including teachers!) often feel inhibited about presenting information on topics about which they have little knowledge. *The Natural Inquirer* probably contains some content information with which you are unfamiliar. We hope this will not discourage you from using the journal in your classrooms. In fact, being unfamiliar with the content can be an advantage as you use *The Natural Inquirer*. There are three ways not knowing the content can be used to your advantage:

1) You can emphasize that the scientific process is a process of discovery. Scientists conduct research to learn about things. Therefore, as you present the articles to your students, you are learning with your students about different topics in natural resources. Teachers can reassure themselves and their students by saying, "We're all scientists here – we're going to learn this together." This is also a good opportunity to help your students understand that no one knows everything, but everyone can learn.
2) Not knowing about the topic will help you to focus on the scientific process used, rather than on the content itself. While learning about different topics in natural resources will help you meet some of your unit objectives, you can help your students focus on critical thinking about science.
3) If you are reading about a topic of special interest to one or more students, you can encourage them to further investigate the topic. This will help foster independent learning skills in your students. Alternatively, you may decide as a class to pursue a topic in more depth.

We are always telling our students that we do not have all the answers. One way of teaching them is to teach how to use resources and find information when you do not know something you want to find out about. We need to model this for our students. Show them that there is no way to "know everything" but that if we know how to find out answers we have control over the information we do not know. This is part of the purpose in the statement that most of us have used at one time or another when asked a question that we cannot answer, "I don't know the answer to that, but I will find out and get that information for you!"

***The Natural Inquirer* integrates many disciplines**

Hands-on activities are important for fostering a love of science and discovery, and are often crucial to understanding particular concepts. Experimental activities, however, are not the only important aspect of science. *The Natural Inquirer* works well with integrating science with other disciplines. Since it is in the format of a scientific journal, reading and language comprehension is a main portion of it. The glossary deals with vocabulary and usage. The basis of the content is focused on science, but there is also a part that deals with geography and social studies in different parts of the world. Also, contained in the articles are information on graphing, data, and calculations that could be used in mathematics. So, this is a tool that touches on all areas of academic disciplines. It could be used as a connection with classes that are combined, or it could be adapted as a unit to be used in all subject areas. The possibilities for this are endless. As we all know, we need to focus on the language arts aspect in all our classes. Just as research scientists communicate their ideas and discoveries by writing and publishing them to share with colleagues, students need to learn how to read science and formulate their own thoughts on the subject. For the average class of 30 students, only one may possibly become a scientist. However, all of then will need to be capable of reading about scientific studies and developing an informed opinion on scientific matters of public concern, such as the location of a new wastewater treatment facility, conflicts between competing uses of natural environments, or even the scientific findings in other fields, such as public health. Each article in *The Natural Inquirer* includes a discovery FACTivity, which you can use to stimulate student interest in the article. However, it is important for students to understand the role of reading in understanding science. Therefore, you may want to emphasize to your students that scientists communicate with each other through journal articles, similar to the ones they will be reading in *The Natural Inquirer*. Other scientists read such articles critically, which is exactly what the students can do also!

The Format of the Articles in *The Natural Inquirer*

Each article is formatted in the same way. Once you become familiar with the format of an article, you can expect the same format for every article. Each article contains:

Title
Glossary
Meet the Scientist
Thinking About Science
Thinking about the Environment
The article
Reflection Questions
Discovery FACTivity
Publication citation
Some may contain a Sidebar

Title

This is a lighthearted title with a descriptive subtitle.

Glossary
A glossary is provided to accompany each article. Understanding these words will be crucial to the student's comprehension of the article. The focus of the glossary is to help students understand the article. The word is listed with a definition.

Meet the Scientist
For each article, we have included a photograph of the principal scientist who performed the research. Our intention is that students will get a visual reminder that anyone can become a scientist, regardless of race, gender, age, or disability. Perhaps this will encourage one of your students to pursue a career in science!

Thinking About Science & Thinking About the Environment
Articles in *The Natural Inquirer* are simplified and are presented in the following format. First, two brief "Abstracts" are presented which focus on a general principle or topic found in the article. The first abstract is titled "Thinking About Science." This abstract focuses on some aspect of the scientific process that can be found in all articles. The second abstract is titled "Thinking About the Environment." This abstract focuses on a particular environmental issue or topic that can be found in the article. The abstracts can be thought of as highlighting the scientific process and content of the article. These abstracts are different from the abstract found in a professional scientific research article in that they do not give a synopsis of the article. Instead, they provide the teacher with an opportunity to engage the students in critical thinking about a main topic found in the article.

The Article
The "abstracts" are followed by the **Introduction, Methods, Results, and Implications** sections, which are very similar to the sections found in a professional journal, but with less detail and technical jargon. The **Introduction** includes a statement of the problem the scientist is trying to solve or the reason the scientist was making the particular observations. It also includes background information and evidence found by other scientists researching the topic or related topics. The introduction is followed by a section detailing the **Methods** used to perform the research. The next section presents the **Results** and often includes tables, figures, or graphs. Finally, in the **Implications** section, the
scientist offers implications of the results and often discusses future research needs on the topic. Some discussion has been included in the results and implications sections, but your students may want to expound in this area and offer their own interpretations!

Reflection Questions
Two or three reflection questions are placed at the end of each section of the article. These questions are designed to aid the teacher in conducting a class discussion about the problems, methods, findings, and implications associated with each research article. If one teaching objective is to foster critical thinking skills, the questions in the reflection sections can be used to stimulate critical thinking among the students about the research and the scientific method.

Discovery FACTivity

Each discovery FACTivity provides the teacher with a hands-on activity related in some way to the article. Some of the activities were designed or adapted by the editors of *The Natural Inquirer*, others were created by the contributing scientists to illustrate a particular concept. A variety of FACTivities are included. Most of the activities can be performed inside, but for some it is necessary to go outside. Some activities can be completed in a few minutes, others may take days, weeks, or even months to see the results. You can use this variety to illustrate the fact that scientific research is highly variable. Some scientists work in a lab, others make telephone calls in a survey, while others work outside. Some research is completed relatively quickly, but it often takes a long time to get results, sometimes even years!

Publication Citation

Each article in *The Natural Inquirer* was written from a published research paper. The citation gives you the publication information for the published research article. By pointing this out to your students, you can reinforce the importance of accurate bibliographic information in any scientific endeavor. If you, as the teacher, want a more thorough account
of the scientists' research, you may want to read the article as it was originally published. The sources are listed in a standard bibliographic format. Consider, for example, the following citation:

> Hanula, J. L., and Franzreb,KE. 1995. Arthropod prey of nestling Red-cockaded woodpeckers in the upper coastal plain of South Carolina. *Wilson Bulletin.* 107:485-495.

In this example, J L. Hanula and K. E. Franzreb are the authors of the original article. Their paper was titled, "Arthropod prey of nestling Red-cockaded woodpeckers in the upper coastal plain of South Carolina." It was published in 1995 in volume 107 of a periodical titled *The Wilson Bulletin.* Their paper can be found on pages 485-495 in this volume. Periodicals such as *The Wilson Bulletin* may be accessible at your local library. Most libraries, however, will not allow the periodicals to be checked out; however, you may read the article at the library and/or photocopy it. Alternatively, you may be able to find the paper on the Forest Service website. Visit www.fs.fed.us and search for the publication by research station. You may also contact the scientist directly by linking to "contacts" on the forest service website.

National Science Standards Matrix

The National Science Standards Matrix was consulted for application of national science standards to each of the articles. Teachers may use the matrix (located at the back of the journal) to identify which national science education standards each article addresses.

About the USDA Forest Service

The USDA Forest Service is the caretaker of national forests and grasslands. It holds a conservationist view of nature and the world in
which we must all learn to care for and respect. There are 155 national forests and 20 national grasslands in 44 states, Puerto Rico, and the U.S. Virgin Islands. The Forest Service is committed to three main principles:

-Protecting & Restoring the Land
-Providing Benefits for People
-Ensuring the Agency's Operational Effectiveness

We all need to realize that protecting the land means that we don't allow use of the land to outstrip its capacity to restore itself. There are other benefits which you may not realize the land offers to you: skiing, camping, hiking, photography, and off-road vehicle opportunities all require taking care of the lands for which we use these outdoor recreation opportunities. National forest lands are integral parts of the economic and social fabric of nearby communities, which, in turn, often depend on public land for their livelihoods in agriculture, mining, timber, and service enterprises. Theodore Roosevelt created the Forest Service in 1905 to effectively administer our vast and diverse forest and range lands. The Forest Service commitment to protection extends to rare and vulnerable plants and animals and to other wildlife unduly threatened by land use practices. We need to always keep in mind this guiding principle: the protection and restoration of our public lands and the production of goods and services for people must strike a dynamic and enduring balance.

About the creation of *The Natural Inquirer*

This journal was created by the USDA Forest Service. Each issue of the journal is field tested in schools to ensure its effectiveness at enhancing science curriculum in the areas of critical thinking and appreciation for the scientific process. All articles are reviewed by a team of middle school students, identified as the editorial review board on the inside front cover of the journal. The teacher may wish to highlight the editorial review board, and may note to the students that all scientific
journals have such boards that review scientific articles prior to publication. *The Natural Inquirer* was created to supplement the current science curriculum. We hope that teachers and students alike
find the articles interesting, and that by reading and thinking about the articles, students may gain a greater understanding of the scientific discovery process, as well as of issues and topics in environmental and natural resource management.
We invite you to share your thoughts and suggestions about and experience with *The Natural Inquirer*. In the back pages of the journal are evaluation forms for both teachers and students. Please copy and complete them then mail them to the address listed. Also, comments may be made directly to Dr. Barbara McDonald at barmac@bigfoot.com.

Suggestions for Teachers on using *The Natural Inquirer*

There are various ways this journal can be used depending on grade level and learner level. Here are some suggestions that may be useful:

***** skits, role play**—students may be put into small groups and allowed to show their creative side! Let them read the articles for themselves and interpret what they think it means. Then, they may put on their skit for the class.

***** reflection questions**—These may be modified to the level of learner. They may be used as discussion, for the entire class to use together in a teacher-facilitated situation, they may be used as a tool to see how much the students learned
and took away from the article, as an individual written response by the students, they may be used in a small student group to generate peer tutoring and discussion.

***** inter-disciplinary unit—**If two or more teachers of different subject areas wanted to work together, *The Natural Inquirer* could be used in this way. Each teacher could create activities and gear the lesson towards their own subject area, while working on the same concept or article in the same time frame.

***** learner level—**this is something to be taken into consideration when deciding to implement *The Natural Inquirer* into a curriculum. Sixth graders may not be ready for this until the end of their school year, and the articles, activities, etc. may need to be greatly modified to fit the maturity level of these young learners. Seventh graders may be exposed to this at the beginning of the year, but may do better with this journal towards the end of their school year after a full year of focusing on process skills and advanced critical thinking. Eighth graders should be able to handle the level of the work and readings in this at any point throughout their school year. *The Natural Inquirer* can even be very beneficial to high school students, with some or no modifications. Each teacher will have to evaluate the level that the learner is on with critical thinking/process skills at their age/grade as well as what level (high/average/special needs) the class is.

Sample Lesson Plans for *The Natural Inquirer* articles

Lesson Plan 1

Subject:
Science: *The Natural Inquirer*
Topic:
"Quit Yer Horsin' Around!"
The Effects of Trampling on Vegetation on Montana

Objective:
--Learner will be able to describe the components of a scientific journal.
--Learner will be able to recognize the effects of human/animal trampling on vegetation.
--Student will be able to read, interpret, and create a bar graph.
--Student will be able to explain ways to prevent trampling and protect vegetation.

Procedure:
1) The class will each read parts of the article aloud together while teacher follows along and facilitates.
2) Class will read each of the definitions in the glossary. They will use it in an example from something they are familiar with.
3) Students will look at and interpret the pictures, graphs, results sections.
4) Class as a whole will think about the implications section and what we can do to help.

5) The teacher will break students up into small groups and give them materials for the FACTivity. The students will then conduct the FACTivity to reach their own conclusions.
6) The teacher will then use the reflection questions to facilitate discussion between the students. Teacher will pose the questions and students will share their answers and opinions aloud with the class.

Evaluation:
Teacher will take up the FACTivities from the student groups. The work done in this activity will be used to evaluate the students.

Lesson Plan 2

Subject:
Science: *The Natural Inquirer*
Topic:
"There Goes the Neighborhood"
The Disruption of American Marten Habitat

Objective:
--Student will be able to describe the best habitat for an American Marten.
--Student will be able to explain why the habitat of a Marten has been disrupted & what can be done to ensure safety of the Marten and its habitat.
--Learner will be able to list components of a scientific journal.
--Learner will be able to describe the way a scientist works in the field.

Procedure:
1) Students will read the article together in a small group setting.
2) Students will discuss the glossary in their small group. They will read the definitions, use it in a sentence, and if there are problems they may have the teacher help them.
3) Students will discuss the reflection questions as they come to them in the article, and write the answers down using one paper for the group.
4) Students will interpret the graphs in their small groups and discuss the implications.

Evaluation:
Students will conduct the FACTivity at home as an out of class assignment. They will fill the shoeboxes with soil and monitor the soil life that they find in their environment around their home. The students can record their findings and present them to their small groups the following day. This will be the teacher evaluation for this activity.

Lesson Plan 3

Subject:
Science: *The Natural Inquirer*
Topic:
"Goldifinch and the Three Scales"
Investigating Songbird Habitats Near Rivers

Objective:
--Learner will discover how to write/compose a scientific paper.
--Student will discover how a songbirds' habitat relates to its ability to thrive.

--Learner will be able to describe the concept of species diversity.
--Student will be able to explain the importance of spatial scale to habitat use.

Procedure:
1) The students will read the article silently to themselves.
2) They will read the glossary and write up a paragraph, including the words that are defined in the glossary.
3) The students will write up answers and opinions to the reflection questions.
4) The students should pretend they are from another planet, how about Mars? The teacher will place students in groups—small-scale Martian scientists, medium scale Martian scientists, and large-scale Martian scientists.

Evaluation:
Individual students will write the FACTivity results and turn in for an out of class assignment to be graded and evaluated by the teacher.

Lesson Plan 4

Subject:
Science: *The Natural Inquirer*
Topic:
"Let Nature Take its Course"
Helping the Environment Take Care of Itself

Objective:
--Learner will be able to describe parts of a scientific journal.
--Learner will be able to describe the work that a scientist does in the field.

--Student will be able to describe the effects of mining on the environment.
--Student will be able to explain what pH is and how acidic/basic soil needs to be.

Procedure:
1) The teacher will put students into small groups. Students will read the article aloud to each other in the groups. The students will read and

discuss the glossary and give examples of how they understand the words in their everyday life. They will discuss the charts, pictures, methods, results, and implications. The teacher will walk around and monitor and give help when needed.

2) The students will carry out the FACTivity in their small groups and write up their results.

Evaluation:

The following day, the students will return to their small groups and present role-plays, or skits, for the rest of the class and the teacher on their interpretation of the article. This skit could be just portraying the information they have been given from the article, or it could be a skit on the implications and how the students can help the environment, or anything creative the students wish to portray.

Student Comments about *The Natural Inquirer*

Seventh grade students who were in a class that The Natural Inquirer was used in gave all these comments.

" I liked the articles—they were interesting."
" It was a good break from our everyday work!"
" I liked the FACTivity, it was really fun to do!"

" The glossary helped me understand some of the big words better."
" This helped me understand better about what a scientist does—I just thought they walked around a lab all day wearing a white coat!"
"I like this a lot better than book work."
"I really liked *The Natural Inquirer!*"
"This assignment was pretty cool!"

Thank You!

The creators of *The Natural Inquirer* hope that you will enjoy this journal and find it as useful and important to your students as we feel it is. This teacher's manual should serve as a guide and give you, the teacher, help in direction and instruction. Use it in part or as a whole, take what you deem useful from it. Good luck in your endeavors with *The Natural Inquirer* !